

Work Order ID 109069 D 3 0 2 1 - 0 4 3

November-11-13 7:20:14 AM

B 1 0 9 0 6 9

\*109069\*

Page 1

Item ID: D3021-043

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Tube Assembly

Stop

\*NS2\*

Start Date: 11/11/13 Start Qty: 2.00 \*2\*

Cust Item ID:

Required Date: 11/25/13 Req'd Qty: 2.00 \*2\*

Customer:

Reference:

Approvals: Process Plan: ML5

Date: 13-11-11

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

| Draw Nbr | Revision Nbr |  |
|----------|--------------|--|
| D3021    | B            |  |

100  
**\*100\*** Large Fab  
Large Fab  
Large Fab  
Memo 0.00  
1-Cut tube as per Dwg D3021  
2-Drill tube as per Dwg D3021 using DT8622  
3-Deburr  
4-Weld stud and end cap as per Dwg D3021 QSI004  
A/R 4130 Rod Batch: 118875

2 B 13-11-18

110 QC9- Inspect visual per QSI004- Fusion Welds 0.00  
**\*110\*** QC  
Quality Control  
Memo 0.00

DAS  
9  
9-89

(2) B-1148

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only 

|   |  |   |  |
|---|--|---|--|
| <p>Work Order: _____</p> <p>Part No. _____</p> <p>NCR No. _____</p> | <b>DISPOSITION</b><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br>Skid-tube <input type="checkbox"/><br>Machining <input type="checkbox"/><br>Thermoforming <input type="checkbox"/><br>Large Fab <input type="checkbox"/><br>Crosstube <input type="checkbox"/><br>Small Fab <input type="checkbox"/><br>Finishing <input type="checkbox"/><br>Composite <input type="checkbox"/><br>Water Jet <input type="checkbox"/><br>Prod. Eng. Coor. <input type="checkbox"/><br>Rec/Store/Packaging <input type="checkbox"/><br>Supplier <input type="checkbox"/> | Engineering <input type="checkbox"/><br>Quality <input type="checkbox"/><br>Other <input type="checkbox"/> |
|---|--|---|--|

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |   |                   |                    |             |              |              |
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Transport     |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

| <b>FAULT CATEGORY</b>  |  |   |  |  |                                |  |  |  |  |
|--|--|---|--|--|--------------------------------|--|--|--|--|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled | <input type="checkbox"/> Other |  |  |  |  |

Work Order ID 109069

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|                |               |                 |              |               |       |       |       |
|----------------|---------------|-----------------|--------------|---------------|-------|-------|-------|
| Item ID:       | D3021-043     | Accept          | *N900040100* | Setup         | Start | *NS1* |       |
| Revision ID:   |               |                 |              | Stop          |       | *NS2* |       |
| Item Name:     | Tube Assembly |                 |              |               |       |       |       |
| Start Date:    | 11/11/13      | Start Qty: 2.00 | *2*          | Cust Item ID: |       |       |       |
| Required Date: | 11/25/13      | Req'd Qty: 2.00 | *2*          | Customer:     |       |       |       |
| Reference:     |               |                 |              |               |       |       |       |
| Approvals:     | Process Plan: | Date:           | Tooling:     | Date:         | Run   | Start | *NR1* |
|                | QC:           | Date:           | SPC (Y/N):   | Date:         | Stop  |       | *NR2* |

| Sequence ID/<br>Work Center ID                      | Operation<br>Description   | Set Up/<br>Run Hours | Tool ID                                | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp          |
|---|--|----------------------|--|--------|--------------|---------------|---------------|------------------|-------------------------|
| 120<br><b>*120*</b><br>OC<br>Quality Control        | QC5- Inspect part completeness to step on W/O  | 0.00                 |  |        |              |               |               |                  | DAS<br>DAS<br>9<br>9-89 |
| 130<br><b>*130*</b><br>Powdercoat<br>Powder Coating | Grey Sandtex(Ref:4.3.5.6) per QSI005 4.3<br><i>m125008.</i>  | 0.00                 |  |        |              |               |               |                  | DAS<br>34<br>9-89       |
| 140<br><b>*140*</b><br>QC<br>Quality Control        | QC3- Inspect Part Finish<br><br>START TIME <u>1:45</u><br>OVEN TEMPERATURE <u>320°</u><br>FINISH TIME <u>2:15.</u> | 0.00                 | <b>DAS</b><br><b>27</b><br><b>9-89</b> |        |              |               |               |                  | <i>2 4 13-11-20.</i>    |
|   | Memo   | 0.00                 | <i>B 1121</i>                          |        |              |               |               |                  |                         |

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only 

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| Work Order: _____ | <b>DISPOSITION</b>   | <b>AGAINST DEPARTMENT/PROCESS</b>  |  |  |  |
| Part No. _____    | Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | Skid-tube <input type="checkbox"/><br>Machining <input type="checkbox"/><br>Thermoforming <input type="checkbox"/><br>Large Fab <input type="checkbox"/> | Crosstube <input type="checkbox"/><br>Small Fab <input type="checkbox"/><br>Finishing <input type="checkbox"/><br>Composite <input type="checkbox"/> | Water Jet <input type="checkbox"/><br>Prod. Eng. Coor. <input type="checkbox"/><br>Rec/Store/Packaging <input type="checkbox"/><br>Supplier <input type="checkbox"/> | Engineering <input type="checkbox"/><br>Quality <input type="checkbox"/><br>Other <input type="checkbox"/> |
| NCR No. _____     |  |  |  |  |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |   |                   |                    |             |              |              |
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Transport     |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

## FAULT CATEGORY

| Landing Gear             | General                                       |  |   |   |  |
|--------------------------|---|--|---|---|--|
| Bending                  | Bend <input type="checkbox"/>                 | Folio/Program <input type="checkbox"/>                     | Outside Dimensions <input type="checkbox"/>   | Pressure/Forced <input type="checkbox"/>    |  |
| Centre Not Concentric    | BOM/Route <input type="checkbox"/>            | Grain <input type="checkbox"/>                             | Over/Under tolerance <input type="checkbox"/> | Set-up <input type="checkbox"/>             |  |
| Cracks                   | Broken/Damage/Defect <input type="checkbox"/> | Hardware <input type="checkbox"/>                          | Part Incorrect <input type="checkbox"/>       | Temperature/Cure <input type="checkbox"/>   |  |
| Crimp/Kink/Ripple/Wave   | Burrs <input type="checkbox"/>                | Inspection Incomplete/Unqualified <input type="checkbox"/> | Part Lost/Missing <input type="checkbox"/>    | Weld <input type="checkbox"/>               |  |
| Cuffs                    | Contamination <input type="checkbox"/>        | Instructions Incomplete/Unclear <input type="checkbox"/>   | Part Moved <input type="checkbox"/>           | Wrong Stock Pulled <input type="checkbox"/> |  |
| Crushing                 | Countersink <input type="checkbox"/>          | Misaligned/off center <input type="checkbox"/>             | Positioned Wrong <input type="checkbox"/>     |   |  |
| Heat Treat               | Cut Too Short <input type="checkbox"/>        | Mislabeled <input type="checkbox"/>                        | Power Loss/Surge <input type="checkbox"/>     |   |  |
| Inspection Strip in Tube | Drawing <input type="checkbox"/>              | Misread <input type="checkbox"/>                           |   | Other <input type="checkbox"/>              |  |
| Marks/Chatter            | Drill Holes <input type="checkbox"/>          | Off-set <input type="checkbox"/>                           |   |   |  |
| Turning Sequence         | Finish <input type="checkbox"/>               | Out of Calibration <input type="checkbox"/>                |   |   |  |
| Wave/Twist in Tube       | Fit/Function <input type="checkbox"/>         | Out of Sequence <input type="checkbox"/>                   |   |   |  |

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|                |               |                 |              |               |       |            |       |
|----------------|---------------|-----------------|--------------|---------------|-------|------------|-------|
| Item ID:       | D3021-043     | Accept          | *N900040100* | Setup         | Start | *NS1*      |       |
| Revision ID:   |               |                 |              |               |       |            |       |
| Item Name:     | Tube Assembly |                 |              |               |       | Stop *NS2* |       |
| Start Date:    | 11/11/13      | Start Qty: 2.00 | *2*          | Cust Item ID: |       |            |       |
| Required Date: | 11/25/13      | Req'd Qty: 2.00 | *2*          | Customer:     |       |            |       |
| Reference:     |               |                 |              |               |       |            |       |
| Approvals:     | Process Plan: | Date:           | Tooling:     | Date:         | Run   | Start      | *NR1* |
|                | QC:           | Date:           | SPC (Y/N):   | Date:         |       | Stop       | *NR2* |

| Sequence ID/<br>Work Center ID   | Operation<br>Description                            | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp    |
|----------------------------------|---|----------------------|---------|--------|--------------|---------------|---------------|------------------|-------------------|
| 150<br><b>*150*</b><br>Packaging | Identify as per dwg & Stock Location: <u>ST/185</u> | 0.00                 |         |        |              |               |               |                  | DAS<br>26<br>9-89 |
| Packaging                        | Memo  | 0.00                 |         |        |              |               |               |                  | 13-11-21          |
| 160<br><b>*160*</b><br>QC        | QC21- Final Inspection - Work Order Release         | 0.00                 |         |        |              |               |               |                  | 13/11/22          |
| Quality Control                  | Memo  | 0.00                 |         |        |              |               |               |                  |                   |

PLB-1121

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order update only 

|                   |   |  |                                    |  |                                      |  |  |  |
|-------------------|---|--|------------------------------------|--|--------------------------------------|--|--|--|
| Work Order: _____ | <b>DISPOSITION</b>                            |  |                                    | <b>AGAINST DEPARTMENT/PROCESS</b>            |                                      |  |  |  |
| Part No. _____    | Rework <input type="checkbox"/>               | Skid-tube <input type="checkbox"/>     | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/>           | Engineering <input type="checkbox"/> |  |  |  |
| NCR No. _____     | Scrap <input type="checkbox"/>                | Machining <input type="checkbox"/>     | Small Fab <input type="checkbox"/> | Prod. Eng. Coor. <input type="checkbox"/>    | Quality <input type="checkbox"/>     |  |  |  |
|                   | Use-as-is <input type="checkbox"/>            | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/>       |  |  |  |
|                   | Suspected Unapproved <input type="checkbox"/> | Large Fab <input type="checkbox"/>     | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/>            |                                      |  |  |  |

| <b>Root Cause</b> | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|-------------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design            |      |      |     |   |                   |                    |             |              |              |
| Doc/Data          |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling     |      |      |     |   |                   |                    |             |              |              |
| Handling/Pre      |      |      |     |   |                   |                    |             |              |              |
| Material          |      |      |     |   |                   |                    |             |              |              |
| Operator          |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup      |      |      |     |   |                   |                    |             |              |              |
| Process           |      |      |     |   |                   |                    |             |              |              |
| Supplier          |      |      |     |   |                   |                    |             |              |              |
| Training          |      |      |     |   |                   |                    |             |              |              |
| Transport         |      |      |     |   |                   |                    |             |              |              |
| Unapproved        |      |      |     |   |                   |                    |             |              |              |

**FAULT CATEGORY**

| <b>Landing Gear</b>                               | <b>General</b>                                |  |   |   |  |  |  |  |  |
|---|---|--|---|---|--|--|--|--|--|
| Bending <input type="checkbox"/>                  | Bend <input type="checkbox"/>                 | Folio/Program <input type="checkbox"/>                     | Outside Dimensions <input type="checkbox"/>   | Pressure/Forced <input type="checkbox"/>    |  |  |  |  |  |
| Centre Not Concentric <input type="checkbox"/>    | BOM/Route <input type="checkbox"/>            | Grain <input type="checkbox"/>                             | Over/Under tolerance <input type="checkbox"/> | Set-up <input type="checkbox"/>             |  |  |  |  |  |
| Cracks <input type="checkbox"/>                   | Broken/Damage/Defect <input type="checkbox"/> | Hardware <input type="checkbox"/>                          | Part Incorrect <input type="checkbox"/>       | Temperature/Cure <input type="checkbox"/>   |  |  |  |  |  |
| Crimp/Kink/Ripple/Wave <input type="checkbox"/>   | Burrs <input type="checkbox"/>                | Inspection Incomplete/Unqualified <input type="checkbox"/> | Part Lost/Missing <input type="checkbox"/>    | Weld <input type="checkbox"/>               |  |  |  |  |  |
| Cuffs <input type="checkbox"/>                    | Contamination <input type="checkbox"/>        | Instructions Incomplete/Unclear <input type="checkbox"/>   | Part Moved <input type="checkbox"/>           | Wrong Stock Pulled <input type="checkbox"/> |  |  |  |  |  |
| Crushing <input type="checkbox"/>                 | Countersink <input type="checkbox"/>          | Misaligned/off center <input type="checkbox"/>             | Positioned Wrong <input type="checkbox"/>     |   |  |  |  |  |  |
| Heat Treat <input type="checkbox"/>               | Cut Too Short <input type="checkbox"/>        | Mislabeled <input type="checkbox"/>                        | Power Loss/Surge <input type="checkbox"/>     | Other <input type="checkbox"/>              |  |  |  |  |  |
| Inspection Strip in Tube <input type="checkbox"/> | Drawing <input type="checkbox"/>              | Misread <input type="checkbox"/>                           |   |   |  |  |  |  |  |
| Marks/Chatter <input type="checkbox"/>            | Drill Holes <input type="checkbox"/>          | Off-set <input type="checkbox"/>                           |   |   |  |  |  |  |  |
| Turning Sequence <input type="checkbox"/>         | Finish <input type="checkbox"/>               | Out of Calibration <input type="checkbox"/>                |   |   |  |  |  |  |  |
| Wave/Twist in Tube <input type="checkbox"/>       | Fit/Function <input type="checkbox"/>         | Out of Sequence <input type="checkbox"/>                   |   |   |  |  |  |  |  |

# Picklist Print

Page 1

November-11-13 7:20:19 AM

Work Order ID: 109069

\*109069\*

Parent Item: D3021-043

\*D3021-043\*

Parent Item Name: Tube Assembly

Start Date: 11/11/13

Required Date: 11/25/13

Comments: IPP REV:A 12.06.11 NEW ISSUE DD VERF:EC

Start Qty: 2.00

Required Qty: 2.00

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued    | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|-------------------|--------|
| D3017-11                        |                        | Manufactured  | No          |                     |                  | 100             | Each               | 76.0000        | 1           | 2            |               |                   |        |
| <b>*D3017-11*</b>               |                        |               |             |                     |                  |                 |                    |                | <b>**</b>   |              |               | <i>Q 13-11-18</i> |        |

Cap

|  |  | <u>Location</u> | <u>Loc Qty</u> | <u>Loc Code</u> |          |
|--|--|-----------------|----------------|-----------------|----------|
|  |  | WA001           | 40             |                 |          |
|  |  | 106668          | 40             |                 |          |
|  |  | WA01            | 36             |                 |          |
|  |  | <i>(04954)</i>  | 36             |                 | <i>2</i> |

D4667-041

**\*D4667-041\***

Arrest Stud Assembly

|  |  | <u>Location</u> | <u>Loc Qty</u> | <u>Loc Code</u> |          |
|--|--|-----------------|----------------|-----------------|----------|
|  |  | WA003           | 2              |                 |          |
|  |  | <i>(92331)</i>  | 2              |                 | <i>2</i> |
|  |  |                 |                |                 |          |
|  |  |                 |                |                 |          |

M4130NT0.750W.049

**\*M4130NT0 750W 049\***

4130 RD Tube .750 x .049W

|  |  | <u>Location</u> | <u>Loc Qty</u> | <u>Loc Code</u> |            |
|--|--|-----------------|----------------|-----------------|------------|
|  |  | MAT033          | 292.3851893    |                 |            |
|  |  | 123339          | 2.1217893      |                 |            |
|  |  | 125252          | 12.7164        |                 |            |
|  |  | 125313          | 102.714        |                 |            |
|  |  | <i>m127111</i>  | 174.833        |                 | <i>4.5</i> |

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date:

Work Order update only 

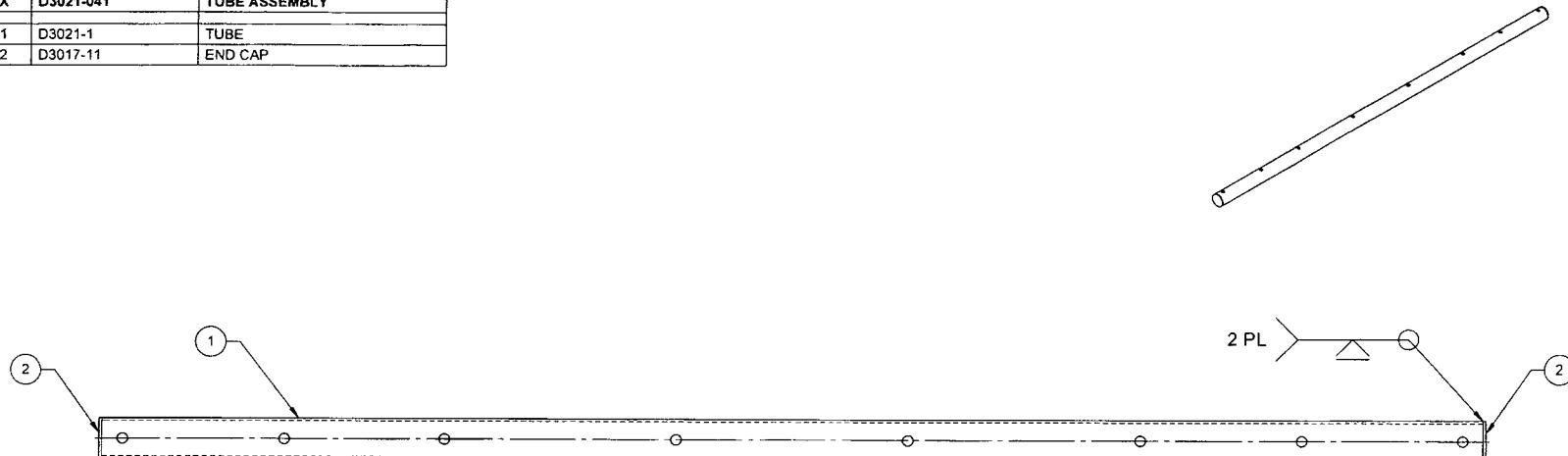
|   |  |   |  |  |  |
|---|--|---|--|--|--|
| <p>Work Order: _____</p> <p>Part No. _____</p> <p>NCR No. _____</p> | <b>DISPOSITION</b><br><input type="checkbox"/> Rework<br><input type="checkbox"/> Scrap<br><input type="checkbox"/> Use-as-is<br><input type="checkbox"/> Suspected Unapproved | <b>AGAINST DEPARTMENT/PROCESS</b><br><input type="checkbox"/> Skid-tube<br><input type="checkbox"/> Machining<br><input type="checkbox"/> Thermoforming<br><input type="checkbox"/> Large Fab | <input type="checkbox"/> Crosstube<br><input type="checkbox"/> Small Fab<br><input type="checkbox"/> Finishing<br><input type="checkbox"/> Composite | <input type="checkbox"/> Water Jet<br><input type="checkbox"/> Prod. Eng. Coor.<br><input type="checkbox"/> Rec/Store/Packaging<br><input type="checkbox"/> Supplier | <input type="checkbox"/> Engineering<br><input type="checkbox"/> Quality<br><input type="checkbox"/> Other |
|---|--|---|--|--|--|

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |   |                   |                    |             |              |              |
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Transport     |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

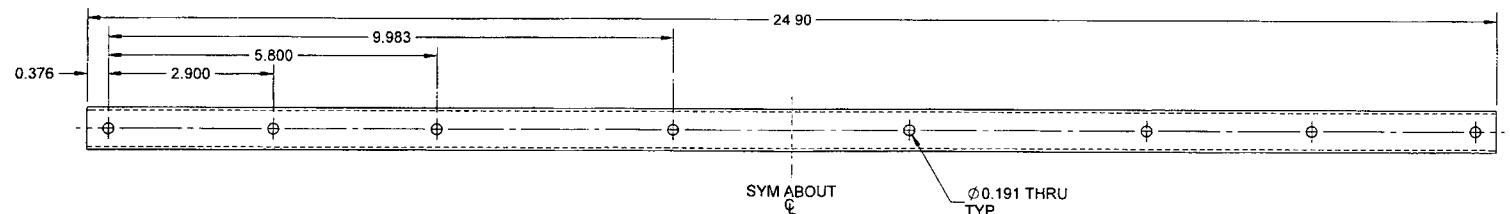
### FAULT CATEGORY

| Landing Gear                                      | General                                       | General  | General                                       | General                                     |
|---|---|--|---|---|
| <input type="checkbox"/> Bending                  | <input type="checkbox"/> Bend                 | <input type="checkbox"/> Folio/Program                     | <input type="checkbox"/> Outside Dimensions   | <input type="checkbox"/> Pressure/Forced    |
| <input type="checkbox"/> Centre Not Concentric    | <input type="checkbox"/> BOM/Route            | <input type="checkbox"/> Grain                             | <input type="checkbox"/> Over/Under tolerance | <input type="checkbox"/> Set-up             |
| <input type="checkbox"/> Cracks                   | <input type="checkbox"/> Broken/Damage/Defect | <input type="checkbox"/> Hardware                          | <input type="checkbox"/> Part Incorrect       | <input type="checkbox"/> Temperature/Cure   |
| <input type="checkbox"/> Crimp/Kink/Ripple/Wave   | <input type="checkbox"/> Burrs                | <input type="checkbox"/> Inspection Incomplete/Unqualified | <input type="checkbox"/> Part Lost/Missing    | <input type="checkbox"/> Weld               |
| <input type="checkbox"/> Cuffs                    | <input type="checkbox"/> Contamination        | <input type="checkbox"/> Instructions Incomplete/Unclear   | <input type="checkbox"/> Part Moved           | <input type="checkbox"/> Wrong Stock Pulled |
| <input type="checkbox"/> Crushing                 | <input type="checkbox"/> Countersink          | <input type="checkbox"/> Misaligned/off center             | <input type="checkbox"/> Positioned Wrong     | <input type="checkbox"/> Other              |
| <input type="checkbox"/> Heat Treat               | <input type="checkbox"/> Cut Too Short        | <input type="checkbox"/> Mislabeled                        | <input type="checkbox"/> Power Loss/Surge     |   |
| <input type="checkbox"/> Inspection Strip in Tube | <input type="checkbox"/> Drawing              | <input type="checkbox"/> Misread                           |   |   |
| <input type="checkbox"/> Marks/Chatter            | <input type="checkbox"/> Drill Holes          | <input type="checkbox"/> Off-set                           |   |   |
| <input type="checkbox"/> Turning Sequence         | <input type="checkbox"/> Finish               | <input type="checkbox"/> Out of Calibration                |   |   |
| <input type="checkbox"/> Wave/Twist in Tube       | <input type="checkbox"/> Fit/Function         | <input type="checkbox"/> Out of Sequence                   |   |   |

| ITEM | QTY | P/N       | DESCRIPTION   |
|------|-----|-----------|---------------|
|      | 041 | D3021-041 | TUBE ASSEMBLY |
| 1    | 1   | D3021-1   | TUBE          |
| 2    | 2   | D3017-11  | END CAP       |



D3021-041 TUBE ASSEMBLY



D3021-1 TUBE

NOTES:

- 1) MATERIAL -041: N/A
  - 1: AISI 4130N SEAMLESS STEEL TUBING, Ø 0.750 X 0.049 WALL  
PER MIL-T-6736 OR AMS 6371/6360/6361/6362/6373/6374  
REF M4130NT0.750W.049
- 2) FINISH: POWDER COAT GREY SANDTEX (4.3.5.6) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3021-041" AND B/N "BXXXXX"  
PER DART QSI 044 6.1 (FINE POINT MARKER)
- 7) WEIGHT: 0.77 lbs

RELEASED  
2012-07-03  
(P PER BN 12-616)

|            |   |     |          |
|------------|---|-----|----------|
| B          | REFORMAT, ADDED -043 & -3                         | AJS | 12.06.12 |
| A          | NEW ISSUE   | CP  | 01.05.18 |
| REV.       | DESCRIPTION                                       |     |          |
| DESIGN     | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA |     |          |
| DRAWN      | REV. B  |     |          |
| CHECKED    | DRAWING NO.<br>D3021                              |     |          |
| MFG. APPR. | SHEET 1 OF 2                                      |     |          |
| APPROVED   | TITLE<br>TUBE ASSEMBLY                            |     |          |
| DE APPR.   | SCALE<br>NTS                                      |     |          |
| DATE       | 12.06.12  |     |          |

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109069 mcs  
13-11-11

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_

Date: \_\_\_\_\_

Work Order update only 

|   |  |   |  |
|---|--|---|--|
| <p>Work Order: _____</p> <p>Part No. _____</p> <p>NCR No. _____</p> | <b>DISPOSITION</b><br><input type="checkbox"/> Rework<br><input type="checkbox"/> Scrap<br><input type="checkbox"/> Use-as-is<br><input type="checkbox"/> Suspected Unapproved | <b>AGAINST DEPARTMENT/PROCESS</b><br><input type="checkbox"/> Skid-tube<br><input type="checkbox"/> Machining<br><input type="checkbox"/> Thermoforming<br><input type="checkbox"/> Large Fab<br><input type="checkbox"/> Crosstube<br><input type="checkbox"/> Small Fab<br><input type="checkbox"/> Finishing<br><input type="checkbox"/> Composite<br><input type="checkbox"/> Water Jet<br><input type="checkbox"/> Prod. Eng. Coor.<br><input type="checkbox"/> Rec/Store/Packaging<br><input type="checkbox"/> Supplier | <input type="checkbox"/> Engineering<br><input type="checkbox"/> Quality<br><input type="checkbox"/> Other |
|---|--|---|--|

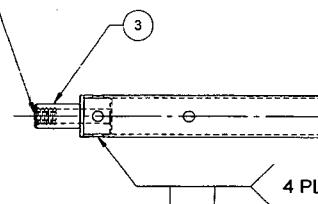
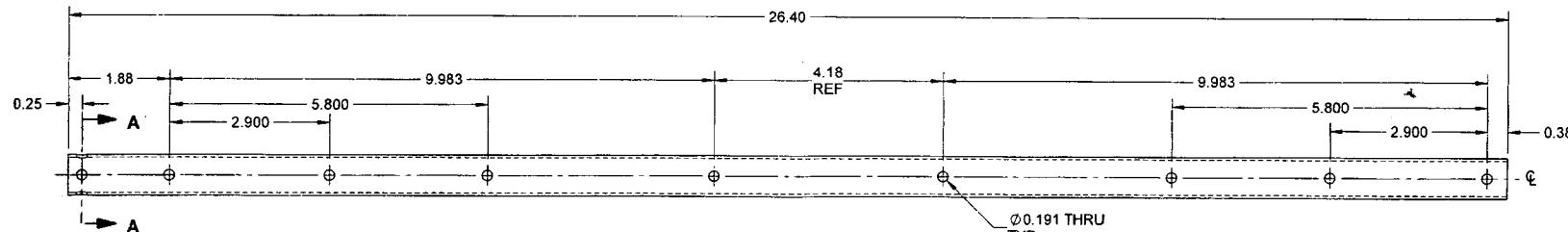
| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |   |                   |                    |             |              |              |
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Transport     |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

### FAULT CATEGORY

|  |  |   |  |  |
|--|--|---|--|--|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other |
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109069

| ITEM | QTY  | P/N         | DESCRIPTION       |
|------|------|-------------|-------------------|
|      | -043 | X D3021-043 | TUBE ASSEMBLY     |
| 1    | 1    | D3021-3     | TUBE              |
| 2    | 1    | D3017-11    | END CAP           |
| 3    | 1    | D4667-041   | ARMREST STUD ASSY |

MASK THREAD PRIOR  
TO POWDER COATD3021-043 TUBE ASSEMBLY

SECTION A-A  
SCALE 1:1  
**RELEASED**  
2012-07-09 GP

- NOTES:**
- 1) MATERIAL -043: N/A
    - 3: AISI 4130N SEAMLESS STEEL TUBING, Ø0.750 X 0.049 WALL PER MIL-T-6736 OR AMS 6371/6360/6361/6362/6373/6374 REF M4130NT0.750W.049
  - 2) FINISH: POWDER COAT GREY SANDTEX (4.3.5.6) PER DART QSI 005 4.3
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: N/A
  - 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3021-043" AND B/N "BXXXXX" PER DART QSI 044 6.1 (FINE POINT MARKER)
  - 7) WEIGHT: 0.88 lbs

|            |          |   |
|------------|----------|---|
| DESIGN     | AJS      | <b>DART AEROSPACE LTD</b>   |
| DRAWN      | AJS      | HAWKESBURY, ONTARIO, CANADA   |
| CHECKED    |          | DRAWING NO.   |
| MFG. APPR. |          | REV. B  |
| APPROVED   |          | D3021   |
| DE APPR.   |          | SHEET 2 OF 2  |
| DATE       | 12.06.12 | TITLE   |
|            |          | SCALE   |
|            |          | NTS   |
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DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only 

|   |  |  |  |  |  |
|---|--|--|--|--|--|
| <p>Work Order: _____</p> <p>Part No. _____</p> <p>NCR No. _____</p> | <b>DISPOSITION</b><br><input type="checkbox"/> Rework<br><input type="checkbox"/> Scrap<br><input type="checkbox"/> Use-as-is<br><input type="checkbox"/> Suspected Unapproved | <input type="checkbox"/> Skid-tube<br><input type="checkbox"/> Machining<br><input type="checkbox"/> Thermoforming<br><input type="checkbox"/> Large Fab | <input type="checkbox"/> Crosstube<br><input type="checkbox"/> Small Fab<br><input type="checkbox"/> Finishing<br><input type="checkbox"/> Composite | <input type="checkbox"/> Water Jet<br><input type="checkbox"/> Prod. Eng. Coor.<br><input type="checkbox"/> Rec/Store/Packaging<br><input type="checkbox"/> Supplier | <input type="checkbox"/> Engineering<br><input type="checkbox"/> Quality<br><input type="checkbox"/> Other |
|---|--|--|--|--|--|

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |   |                   |                    |             |              |              |
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Transport     |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

### FAULT CATEGORY

| Landing Gear                                      | General                                       |  |   |
|---|---|--|---|
| <input type="checkbox"/> Bending                  | <input type="checkbox"/> Bend                 | <input type="checkbox"/> Folio/Program                     | <input type="checkbox"/> Outside Dimensions |
| <input type="checkbox"/> Centre Not Concentric    | <input type="checkbox"/> BOM/Route            | <input type="checkbox"/> Grain                             | <input type="checkbox"/> Pressure/Forced    |
| <input type="checkbox"/> Cracks                   | <input type="checkbox"/> Broken/Damage/Defect | <input type="checkbox"/> Hardware                          | <input type="checkbox"/> Set-up             |
| <input type="checkbox"/> Crimp/Kink/Ripple/Wave   | <input type="checkbox"/> Burrs                | <input type="checkbox"/> Inspection Incomplete/Unqualified | <input type="checkbox"/> Temperature/Cure   |
| <input type="checkbox"/> Cuffs                    | <input type="checkbox"/> Contamination        | <input type="checkbox"/> Instructions Incomplete/Unclear   | <input type="checkbox"/> Weld               |
| <input type="checkbox"/> Crushing                 | <input type="checkbox"/> Countersink          | <input type="checkbox"/> Misaligned/off center             | <input type="checkbox"/> Wrong Stock Pulled |
| <input type="checkbox"/> Heat Treat               | <input type="checkbox"/> Cut Too Short        | <input type="checkbox"/> Mislabeled                        | <input type="checkbox"/> Other              |
| <input type="checkbox"/> Inspection Strip in Tube | <input type="checkbox"/> Drawing              | <input type="checkbox"/> Misread                           |   |
| <input type="checkbox"/> Marks/Chatter            | <input type="checkbox"/> Drill Holes          | <input type="checkbox"/> Off-set                           |   |
| <input type="checkbox"/> Turning Sequence         | <input type="checkbox"/> Finish               | <input type="checkbox"/> Out of Calibration                |   |
| <input type="checkbox"/> Wave/Twist in Tube       | <input type="checkbox"/> Fit/Function         | <input type="checkbox"/> Out of Sequence                   |   |